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TITLE: Inverse modified discrete
cosine transform signal
transforming system

DATE-ISSUED: July 8, 1997

INVENTOR-INFORMATION:

| NAME | STATE | ZIP CODE | COUNTRY | CITY |
|----------------|-------|----------|---------|----------|
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APPL-NO: 08/ 731645

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PARENT-CASE:

This is a continuation of application Ser. No. 08/458,338 filed on Jun. 2, 1995, which is a divisional application of application Ser. No. 08/119,003 filed on Sep. 9, 1993 now both are abandoned.

| COUNTRY | FOREIGN-APPL-PRIORITY-DATA: |
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| APPL-DATE | APPL-NO |
| JP | 4-282440 |
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US-CL-CURRENT: 375/240, 708/400

ABSTRACT:

An MDCT calculating circuit includes an x.sub.01 calculating circuit for multiplying input signals with a forward transforming window and a linear forward transforming unit for linear forward transforming an output signal of the calculating circuit. The linear forward transforming unit includes an x.sub.02 calculating circuit and an x.sub.03 calculating circuit for pre-processing the output signal of the x.sub.01 calculating circuit and an integration and summation processing circuit for executing integration and summation processing operations on an output signal of the pre-processing unit. The integration and summation processing circuit executes an integration and summation operation on an $N/2$ number of input signals from the pre-processing unit by grouping a k number of input signals as a processing unit and iteratively executes the integration and summation processing operations a $N/(2 \cdot K)$ number of times for outputting a sum total of $N/2$ number of signals.

16 Claims, 7 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 7

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Detailed Description Text - DETX (41):

In a flow chart of FIG. 4, the signal transforming sequence in the embodiment of FIG. 2 for executing MDCT operations by the method of the present invention is shown. At a first step S1 in FIG.4, chronological sample data, such as PCM audio data, are grouped into blocks each made up of a predetermined number of, herein N samples. The blocks are set so that an overlap with neighboring blocks amounts to 50%, that is the neighboring blocks are overlapped by N/2 samples, as described in connection with FIG. 1, and sample data of the respective blocks are multiplied by a forward transforming window Wh, as described in connection with FIG. 1. These filtered N-samples of the chronological data x.sub.01 are modified at the next step S2 as shown by the equations (3) and (4) for transformation into an N/2 number of real number data x.sub.03. At the next step S3, calculations shown by the equations (17) to (20), (29) and (31) are executed on x.sub.03 to find the N/2 number of spectral data x.sub.0 which are outputted as MDCT output data.

Detailed Description Text - DETX (47):

In a flow chart of FIG. 5, the signal transforming sequence in the embodiment of FIG. 3 for executing IMDCT operations by the method of the present invention is shown. At a first step S11 shown in FIG. 5, an N/2 number of spectral data y.sub.1 is processed by sign exchange and re-arraying as shown by equation (9) for being converted into an N/2 number of real number data

y.sub.11. At the next step S12, the real number data y.sub.11 are processed by processing operations in accordance with equations (32) to (35), (43) and (44) to generate an N/2 number of data W.sub.0. At the next step S13, the data W.sub.0 are processed by transform processing as shown by equation (37) to find an N number of real number data W.sub.1.

Claims Text - CLTX (2):

a linear inverse transforming unit for linear inverse transform of input signals, said linear inverse transforming unit comprising a pre-processing section for pre-processing the input signals, an integration and summation processing section for executing integration and summation processing operations on output signals of said pre-processing section, the output signals of said pre-processing section represented solely by real number data, and a post-processing unit for post-processing output signals of said integration and summation processing section, said integration and summation processing section executing the integration and summation operations on the N/2 number of input signals supplied from said pre-processing section by grouping the input signal by a K number of terms, and executing the operations iteratively by $N/(2 \cdot K)$ number of times for outputting a sum total of a N/2 number of signals; and

Claims Text - CLTX (13):

multiplying the linear inverse transformed input signals by pre-processing

the linear inverse transformed input signals to generate pre-processed linear inverse transformed input signals, the pre-processed linear inverse transformed input signals represented solely by real number data, executing integration and summation processing operations on the pre-processed linear inverse transformed input signals and post-processing the pre-processed linear inverse transformed input signals, said execution of integration and summation processing operations operative to group the pre-processed linear inverse transformed input signal by a K number of terms, where K is a natural number, and to iteratively execute such operations by $N/(2*K)$ number of times to output a sum total of a $N/2$ number of signals.

Current US Original Classification - CCOR (1):
375/240